

SERVICE MANUAL

DATSUN PICK-UP
MODEL 620 SERIES
CHASSIS & BODY



NISSAN MOTOR CO., LTD.
TOKYO, JAPAN

SECTION FA

FRONT AXLE & FRONT SUSPENSION

FA

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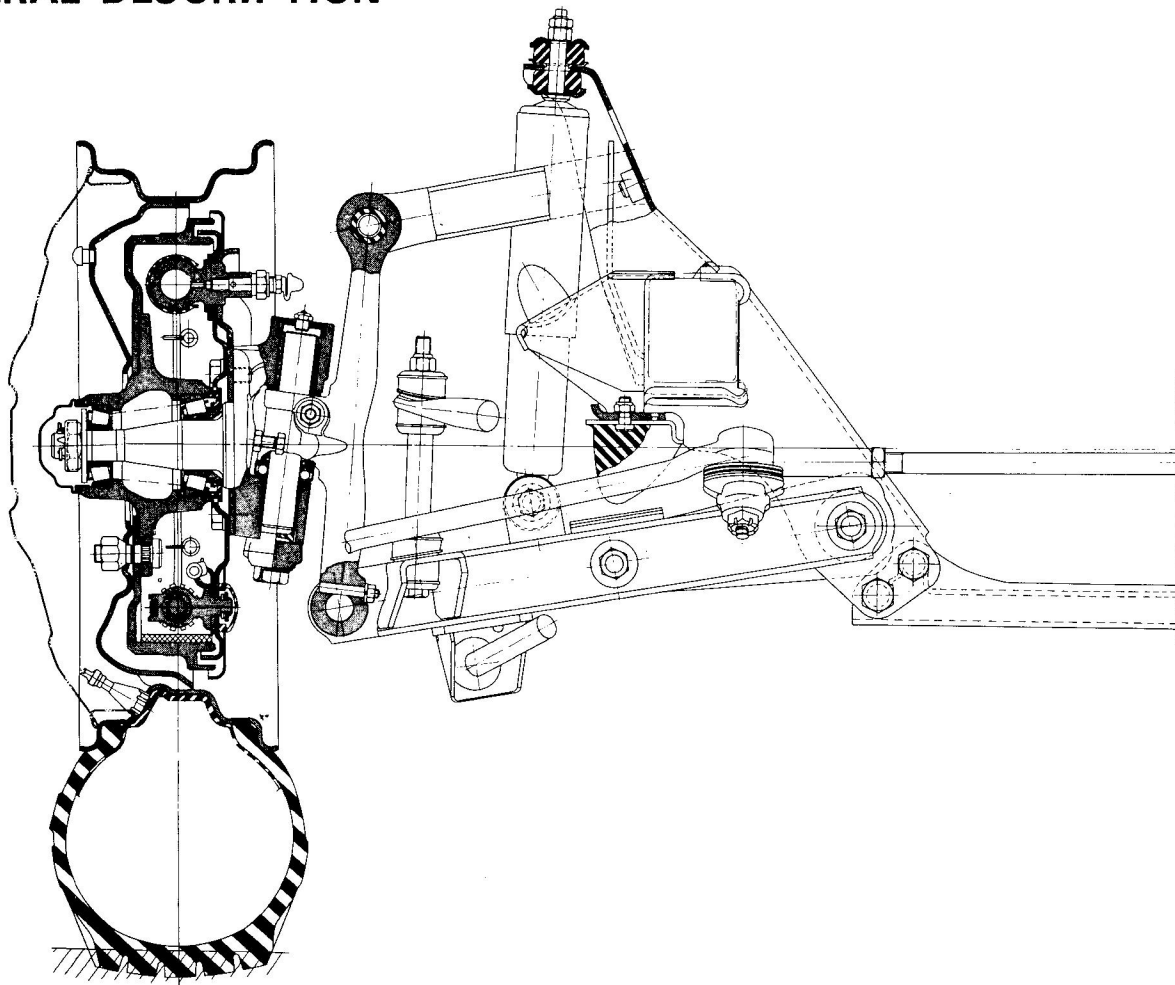
FRONT AXLE AND FRONT SUSPENSION

FRONT AXLE & FRONT SUSPENSION

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GENERAL DESCRIPTION



FA224

Fig. FA-1 Sectional view of front axle and front suspension

FRONT AXLE AND FRONT SUSPENSION

The design of the front suspension adopts the independent double-wishbone type suspension used the torsion bar spring. Both the upper and lower links are installed on the bracket which is welded on the frame. And the above links swing to allow the knuckle spindle to move freely in a vertical dimension.

The top and bottom of the knuckle spindle support are connected to the upper link through rubber bushing and to the lower link through screw bushing.

The tension rod held by the brackets on the chassis frame and lower link with rubber bushings, bears the force of fore and aft direction.

The front end of the torsion bar spring is installed to the torque arm which attaches to the lower link. The opposite end is installed to the spring anchor that secures to chassis frame firmly. The both ends of the torsion bar spring are serrated.

The shock absorber is double-action, telescopic hydraulic type.

The upper stem is attached to the bracket of the chassis frame. The lower insulated bracket is bolted to the lower link.

The bumper rubber secured to the bracket of the frame, limits the vertical motion of the suspension link.

The knuckle spindle is connected to the knuckle spindle arm by the king pin. The king pin bushings are fitted to the upper and lower arm portions of the knuckle spindle, and seals are provided at the portions mentioned to keep water and dirt from entering.

The knuckle arm is connected to the lower end of the knuckle spindle to transmit the movement of the steering wheel to the knuckle spindle.

The wheel hub is supported by two taper roller bearings on the knuckle spindle. The brake drum and wheel are secured to the hub by the hub bolts.

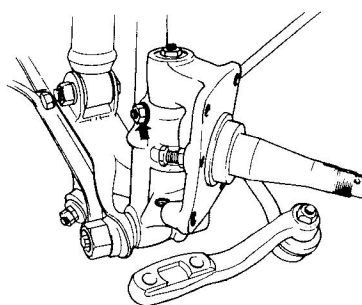
The above component parts are used on the vehicles as standard specifications, and the stabilizer is available as an optional part.

FRONT AXLE

Removal and installation

Removal

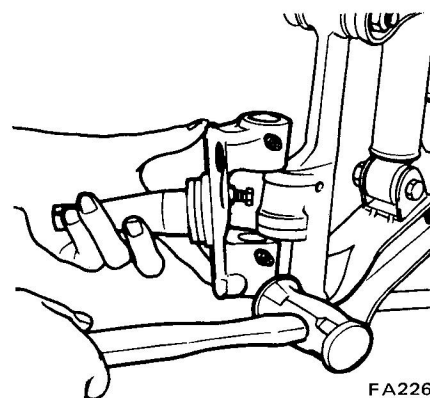
1. Jack up and support vehicle on the stands at the frame in a safe manner.
2. Remove front wheel.
3. Remove brake hose together with connector from wheel cylinder.
4. Remove brake drum.
5. Remove hub cap and then remove cotter pin, adjusting cap, and spindle nut from knuckle spindle.
6. Remove wheel hub, outer and inner wheel bearings, bearing washer and grease seal from knuckle spindle.
7. Remove brake disc assembly from the flange of knuckle spindle.
8. Remove knuckle arm from knuckle spindle.
9. Remove king pin lock bolt.



FA225

Fig. FA-2 Removing king pin lock nut

10. After removing air breather, remove plug from the top of king pin with the following method: Drill a 10.5 mm (0.413 in) diameter hole on the plug, thread hole with a tap (M12-1.25), screw a bolt into threaded hole and pull out the plug.
11. Apply drift to the top of king pin and drive out king pin along with lower plug.
12. Tap spindle with a soft hammer and detach it from knuckle spindle support. Take care not to drop thrust bearing.



FA226

Fig. FA-3 Removing knuckle spindle

Installation

Install front axle in reverse sequence to removal by noting the following matters. Furthermore, when installing front axle, lightly coat grease to sliding parts.

1. Insert O-ring on the lower end of knuckle spindle support. Install thrust bearing and spindle shim together with knuckle spindle to knuckle spindle support.

In this operation, select spindle shims to obtain the specified clearance between knuckle spindle and knuckle spindle support. To measure the clearance with a filler gauge, jack up the bottom of spindle slightly.

Standard clearance:

0.1 mm (0.004 in) or less

Note: Be sure to install thrust bearing to face covered side upward.

2. Line up locking bolt hole of knuckle spindle support with the notch in king pin and secure lock bolt. Be sure to check knuckle spindle for smooth movement. Be certain to move knuckle spindle smoothly and readjust shim if necessary. In addition, check bushings and king pin as required.
3. Press fit plug to the upper of knuckle spindle. Then, install lower plug to the lower knuckle spindle.

Note: Make sure to place lower plug correctly.

4. Secure knuckle arm to knuckle

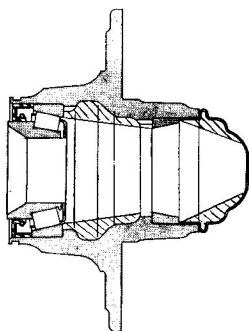
FRONT AXLE AND FRONT SUSPENSION

spindle and torque bolt to 10.3 to 12.1 kg-m (75 to 88 ft-lb). Bend lock plate to engaged flats on bolt head.

Note: When disassembled, discard used lock plate.

5. Pack grease to the upper and lower bushings on knuckle spindle until grease comes out from grease seal.

6. Fill wheel hub and cap with grease up to the described level. See Figure FA-9.



FA141

Fig. FA-4 Greasing wheel hub

7. Pack roller and cone assembly and the cavity of grease seal lip with grease.

8. Coat grease to the thread of knuckle spindle, bearing washer, and bearing lock nut.

9. Secure wheel hub, bearings, bearing washer and spindle nut on knuckle spindle and adjust bearing preload referring to the paragraph "Wheel bearing adjustment."

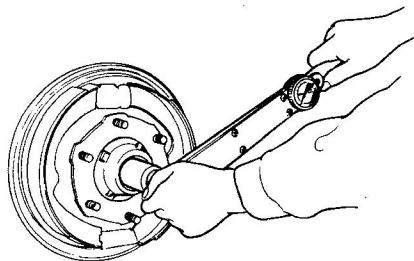
Note: Be sure to obtain correct preload on wheel bearings for the purpose of having their long life, taking care to keep wheel bearings, grease seal, bearing washer and spindle nut clean when installing them.

Wheel bearing adjustment

Wrong adjustment of wheel bearings causes abnormal wear and score on the bearings and knuckle spindle.

To attain proper preload on wheel bearings, proceed the following operations:

1. Torque spindle nut to 3.0 to 3.5 kg-m (22 to 25 ft-lb) using torque wrench.



FA227

Fig. FA-5 Tightening spindle nut

2. Rotate wheel hub a few turns clockwise and counterclockwise to seat bearings. Then, retighten spindle nut to the same tightening torque. Be certain to rotate hub smoothly.

3. Back off spindle nut in range from 40 to 70 degrees. Locate adjusting cap on spindle nut so as to align the castellation on the cap with the cotter pin hole in the spindle.

4. Check the hub rotation. If hub rotates properly, measure bearing rotation starting torque. If measured torque is deviated from the specified value, replace bearings or readjust.

The starting torque can be measured by a spring balance as shown in Figure FA-6.

Spring balance indication at hub bolt:

New bearing:

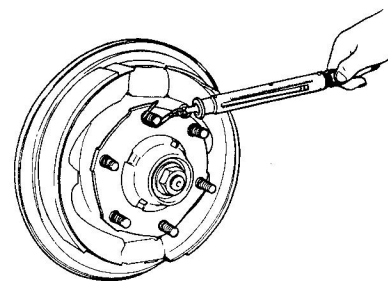
2.1 kg (4.6 lb) or less

Used bearing:

1.0 kg (2.2 lb) or less

Notes:

- When measuring the starting force, pull the spring balance toward tangential direction against normal line connected between hub bolt and spindle center.
- Axial play is permissible to exist in 0.1 mm (0.004 in) or less.



FA228

Fig. FA-6 Measuring bearing rotation starting torque

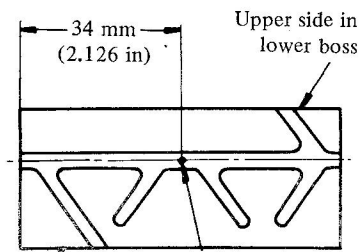
5. Install a new cotter pin. Bend the ends of cotter pin around the castellated flange of adjusting cap. Then, install hub cap.

Disassembly and assembly

Knuckle spindle

1. Drive spindle bushing and grease seal out of knuckle spindle with King Pin Bush Drift ST35380000. Discard bushing and grease seal when disassembled.

2. After cleaning king pin bores thoroughly, install bushing carefully by using the above special tool. Position bushing in accordance with the instructions filled in Figure FA-7 and FA-8.



Upper side in upper boss

FA229

Fig. FA-7 King pin bushing

FRONT AXLE AND FRONT SUSPENSION

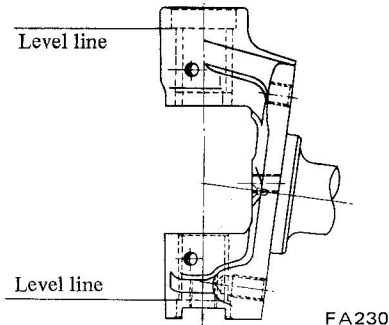


Fig. FA-8 Bushing location

3. Remove grease nipple and drill grease hole on bushing through threaded grease nipple hole. When grease hole is drilled, remove metal chip and burr thoroughly.

Drilling diameter:
approximate 3mm (0.1181 in)

4. Ream the inside of bushing to the specified value with King Pin Bush Reamer HT56802000.

Bushing inner diameter
(when fitted):
20.010 to 20.035 mm
(0.7878 to 0.7888 in)

Note: Carry out reaming from both upper and lower bushings. When reaming upper side, use lower side as reaming guide, and when reaming lower side, use upper side as reaming guide to align the center line correctly.

5. Press fit grease seal on upper arm with Grease Seal Drift ST35390000. In installing grease seal, take care not to damage seal lip.

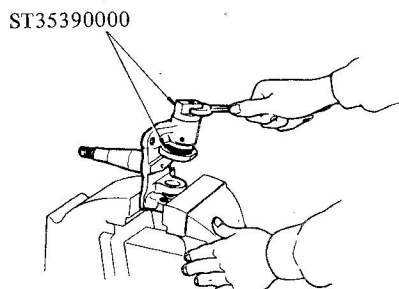


Fig. FA-9 Installing grease seal

Wheel hub

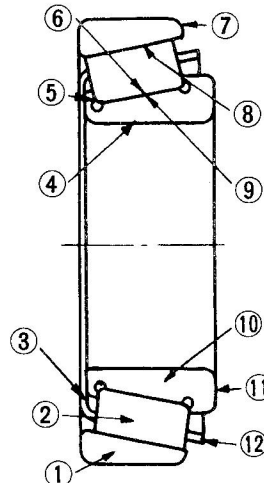
1. After removing grease seal with screwdriver, lightly tap outer race circumference with a hammer by applying a brass bar and remove outer bearing race from hub. When tapping outer race circumference, tap evenly.
2. Remove all traces of old grease from bearings, hub and knuckle spindle.
3. Install inner and outer bearing races in hub with a suitable tool. Be sure to seat the races properly in hub.
4. Pack the inside of hub and hub cap with specified grease to the described level. See Figure FA-4. Also, pack the bearing cone and roller assemblies with the same lubricant.



Fig. FA-10 Greasing bearing cone and roller assembly

5. Place inner bearing cone and roller assembly in hub. Coat grease slightly to the lips of new grease seal, and seat it properly.

Visual serviceability standard for wheel bearing



- 1 Outer race
- 2 Roller
- 3 Small collar
- 4 Collar surface
- 5 Inner race fitted surface
- 6 Inner race surface
- 7 Outer race fitted surface
- 8 Outer race surface
- 9 Roller rolling surface
- 10 Inner race
- 11 Large collar
- 12 Supporter

Inspection

1. King pin and bushing

Check and replace king pin and/or bushing if the following defective condition is detected; deformation, scores, partial wear, and excessive clearance between king pin and bushing in diameter direction exceeding limit listed below.

Clearance limit:
0.15 mm (0.0059 in)

Standard dimensions

King pin outer diameter:
19.979 to 20.000 mm
(0.7866 to 0.7874 in)

Bushing inner diameter:
20.010 to 20.035 mm
(0.7878 to 0.7888 in)

2. Wheel bearing

Thoroughly clean grease and dirt from wheel bearing with cleaning solvent, and dry with compressed air free of moisture. Check wheel bearing to see that it rolls freely and is free from noise, crack, pitting, or wear. Also, check outer race for condition. Removal of outer race from drum is not necessary.

Shown below is the chart which furnishes the necessary information on "Visual Serviceability Standard for Wheel Bearing."

Fig. FA-11 Wheel bearing assembly

FRONT AXLE AND FRONT SUSPENSION

Judgement	× : Unserviceable △ : May be used when minor * : Rust should be removed with #0 emery paper			
Components	Race and roller		Supporter	Cause
	Rolling surface	Fitted surface		
Flaking (Fig. a, b)	×			Service life due to rolling fatigue. However, this symptom occurs before the service life. The following causes are considered. <ul style="list-style-type: none"> ● Abnormal load (overload). ● Improper handling or installing.
Crack (Fig. c, d)	×	×	×	<ul style="list-style-type: none"> ● Excessive tightening. ● Excessive gap and a considerable shock received from the outside. ● Rapid heat generation on the race due to creep. ● Bitten supporter with seizing rollers. ● Abnormal thrust load. ● Tapped with a hammer while removing.
Seizure	×	×	×	In the most cases, seizure occurs as the result of grown discoloring or flaking.
Scratch	△	△	△	<ul style="list-style-type: none"> ● Shock is given carelessly during installation. ● Bit foreign matter.
Recess or wear made by pressing or striking (Fig. e, f, g)	△	△	△	<ul style="list-style-type: none"> ● Careless installation, removal, or other rough handling (scar due to striking). ● Recess made by foreign matter.
Wear	△	△	△	<ul style="list-style-type: none"> ● Poor lubricant quality or deteriorated lubricant. ● Intrusion of dust. Fitted surface is worn remarkably. ● Wear due to excessive preliminary pressure.
Biting	△	△	△	<ul style="list-style-type: none"> ● Excessive preliminary pressure or faulty lubrication.
Fretting	△*	△*	△*	<ul style="list-style-type: none"> ● The fitted part is discolored to brown or black. ● Fretting corrosion (rust on fitted part) means fine relative slip on metal contact surface.

FRONT AXLE AND FRONT SUSPENSION

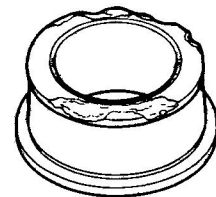
Components	Race and roller		Supporter	Cause
	Rolling surface	Fitted surface		
Rust (Fig. h)	△*	△*	△*	<ul style="list-style-type: none"> • Temperature increased during operation lowers when the bearing stops, moisture inside the bearing is condensed, becoming fine drips, and the grease is moistened. • The bearing has been placed in a highly moistened place for a long period of time. • Intrusion of moisture, chemicals, etc., or the bearing is touched with bare hand and no rustproof action has been taken.
Discoloring	The wheel bearing is serviceable if discoloring can be removed with solvent or by polishing.			<ul style="list-style-type: none"> • Slight discoloring may become like oxidized oil stain due to grease. • In the most cases, this occurs when preliminary pressure is too high.



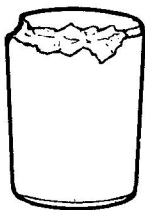
a) Inner race flaking



b) Roller flaking



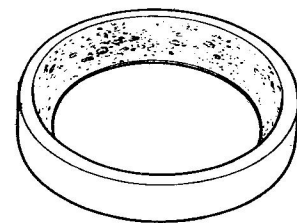
c) Cracked inner race



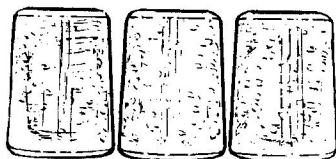
d) Cracked roller



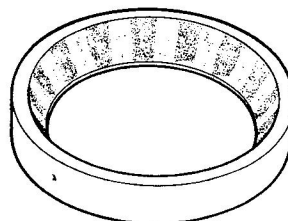
e) Recess on inner race



f) Recess on outer race



g) Recess on roller



h) Rust outer race

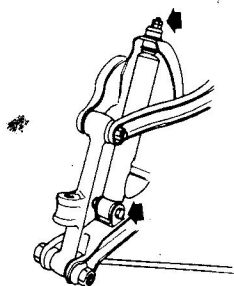
FA007
Fig. FA-12 Defective conditions of bearing

FRONT AXLE AND FRONT SUSPENSION

SHOCK ABSORBER

Removal and installation

1. Raise vehicle on a hoist or stands.
2. Remove wheel.
3. Hold the upper stem of shock absorber and remove nuts, washer, and rubber bushing.
4. Remove bolt from the lower end of shock absorber.



FA232

Fig. FA-13 Shock absorber

5. Retain lower rubber bushing in position, install the lower end of shock absorber to the bracket of lower link, and torque the bolt to 3.1 to 4.1 kg-m (23 to 30 ft-lb).

Note: Insert the bolt from the front side of vehicle.

6. Install the upper end of shock absorber to body bracket and tighten lock nuts to the specifications.

Tightening torque:

1.6 to 2.2 kg-m (12 to 16 ft-lb)

Inspection

1. Check shock absorber for visible defects and oil leaks. Place shock absorber vertically in a vise, and hand stroke shock absorber as outlined below:

Extend and compress shock absorber as far as possible, travelling as long as possible.

If smooth hydraulic resistance is not present in both direction, replace absorber.

2. Replace rubber bushing if crack or deterioration is detected.

Specifications for shock absorber

Item	Model	Pick-up	Double Pick-up
Piston stroke	mm (in)	110 (4.3)	
Damping force	kg (lb) [0.3 m/sec. (0.98 ft/sec.)]		
Rebound		76 (168)	110 (242.5)
Compression		38 (84)	55 (121.3)

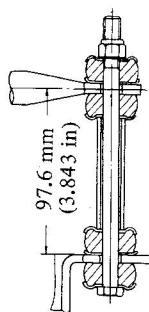
STABILIZER

Removal and installation

1. Raise vehicle on a hoist or stands.
2. Remove wheel.
3. Loosen securing nut at the lower link side of stabilizer.
4. Remove bolt securing stabilizer mounting bracket to chassis frame.

Install stabilizer in the reverse sequence to removal, noting the following instructions.

5. Attach stabilizer mounting bracket to chassis frame, tightening bolt to 1.6 to 2.2 kg-m (12 to 16 ft-lb) torque.
6. Install stabilizer lower link side to connecting rod and tighten nut to the specifications as shown in Figure FA-14. Then, torque lock nut to 1.6 to 2.2 kg-m (12 to 16 ft-lb).



FA233

Fig. FA-14 Stabilizer detail

Inspection

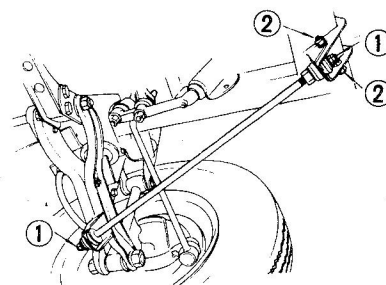
Check stabilizer for deformation

and rubber bushings for crack, wear and deterioration. Replace if necessary.

TENSION ROD

Removal and installation

1. Raise vehicle on a hoist or stands.
2. Remove wheel.
3. Remove nuts ① from both ends of tension rod.
4. Remove bracket bolt ② from the front end of tension rod, and remove tension rod with bracket.



FA234

Fig. FA-15 Tension rod

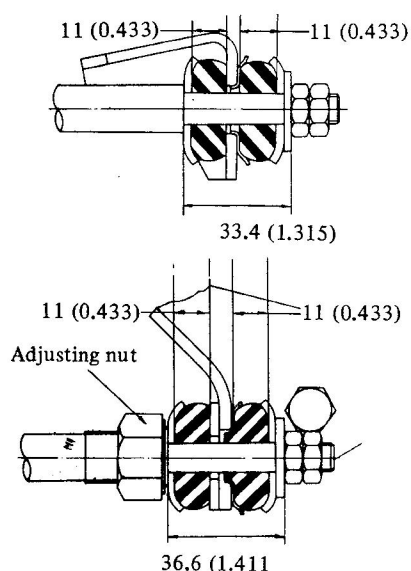
Install tension rod in reverse sequence to removal, noting the following instructions.

FRONT AXLE AND FRONT SUSPENSION

5. Install tension rod at rear end, tighten nut to make the distance of rubber bushing to be 33.4 mm (1.315 in), and torque lock nut to 1.6 to 2.2 kg-m (12 to 16 ft-lb).

6. Install tension rod bracket to chassis frame bracket and torque nut to 1.6 to 2.2 kg-m (12 to 16 ft-lb).

When two rubber bushings are different in size, arrange adjusting nut. Standard dimension is 11 mm (0.433 in) as shown in Figure FA-16. Torque lock nut to 1.6 to 2.2 kg-m (12 to 16 ft-lb).



Unit: mm (in)

FA235

Fig. FA-16 Tension rod detail

Inspection

1. Check tension rod for bend and the thread for defective condition. Repair or replace as required.
2. Check bushing rubber for wear and deterioration. Replace if necessary.

TORSION BAR SPRING

Removal and installation

1. Raise vehicle on a hoist or stands.

2. Remove wheel.
3. Loosen nuts at spring anchor bolt.

4. Remove dust cover at the rear end of torsion bar spring and detach snap ring.

5. Withdraw torsion bar spring rearward after pulling out anchor arm rearward.

Install torsion bar spring in the reverse sequence to removal, noting the following instructions.

6. Coat grease on the serrations of torsion bar spring and install it to torque arm.

Note: Take care to install left and right torsion bar spring correctly. They can be identified with "L" (Left) and "R" (Right) marked on the end surface.

7. Install anchor arm to obtain "A" dimension to the specifications as shown in Figure FA-17, contacting lower link with bound bumper rubber. After retaining snap ring and dust cover, tighten adjusting nut until "B" dimension come to the specifications.

Note: Discard snap ring when removing it.

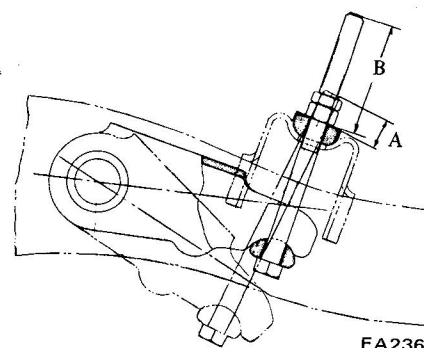


Fig. FA-17 Installing anchor arm

Unit: mm (in)

	A	B
Standard body	5 to 15 (0.197 to 0.591)	60 to 70 (2.363 to 2.756)
Long body	15 to 25 (0.591 to 0.984)	60 to 70 (2.363 to 2.756)
Double Pick-up	23.5 (0.925)	61.5 (2.421)

8. Install wheel and lower vehicle. Adjust vehicle posture at curb weight (full fuel tank, no passengers), referring to "Adjustment."

9. Torque lock nut to 3.1 to 4.1 kg-m (23 to 30 ft-lb).

Inspection

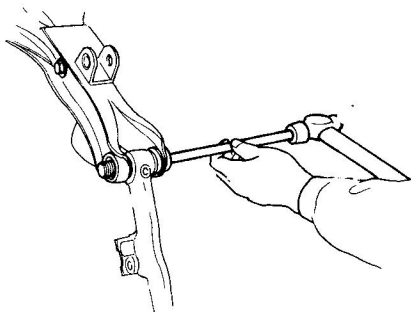
Check torsion bar spring for wear, twist, etc. When adjusting vehicle posture, replace torsion bar spring with a new one if the specified height can not be obtained.

	Diameter x Length mm (in)	Torsional rigidity kg-m/deg. (ft-lb/deg.)
Standard body	20.7 x 830 (0.815 x 32.68)	2.99 (0.118)
Long body	21.9 x 830 (0.863 x 32.68)	3.74 (0.147)
Double Pick-up	20.7 x 830 (0.815 x 32.68)	2.99 (0.118)
U.S.A. & Canada (Optional for common countries)	21.9 x 830 (0.863 x 32.68)	3.74 (0.147)

UPPER AND LOWER LINKS

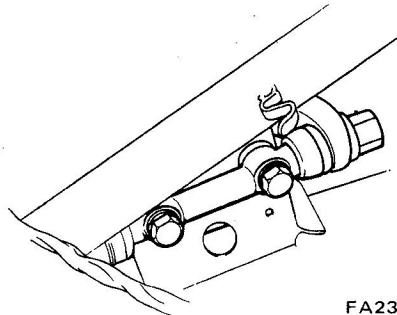
Removal and installation

1. Raise vehicle on a hoist or stands.
2. Remove wheel and brake drum as an assembly.
3. Remove wheel hub. Refer to section "Front Axle."
4. Loosen bolts retaining brake disc to knuckle spindle and remove brake disc.
5. Remove knuckle arm, torsion bar spring, stabilizer, shock absorber, and tension rod in this order referring the related sections.
6. Remove upper fulcrum bolt securing knuckle spindle support to upper link assembly and disassemble them.
7. Remove upper link bushings from knuckle spindle support.
8. Remove screw bushings from both ends of lower link fulcrum pin.
9. Loosen nut at lower portion of knuckle spindle support from inside and pull out cotter pin retaining fulcrum pin.
10. Pull out fulcrum pin with drift and remove knuckle spindle support with knuckle spindle from lower link. Then, detach dust cover.



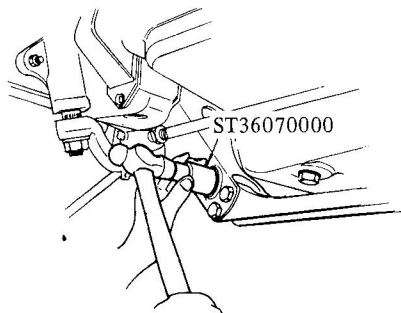
FA237
Fig. FA-18 Removing fulcrum pin

11. Remove bolts retaining upper link spindle and remove upper link spindle with camber adjusting shims from body bracket.



FA238
Fig. FA-19 Removing upper link spindle

12. Remove nut retaining lower link spindle and remove lower link spindle. Remove lower link with torque arm from mounting bracket.
13. Using Lower Link Bushing Drift ST36070000 to lower link bushing, tap it with a hammer and drive out lower link bushing from bracket.



FA239
Fig. FA-20 Removing lower link bushing

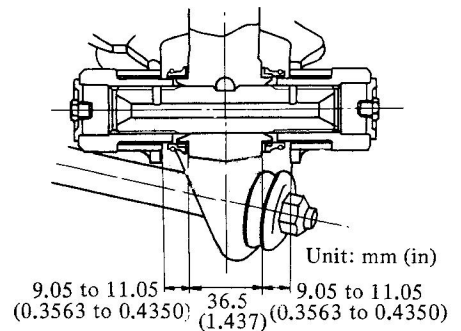
Install upper and lower links in the reverse sequence to removal, noting the following instructions.

14. When the collar inside of lower link mounting bracket and bushing outside are rusted, remove rust with emery paper.
15. Fit lower link bushing into lower link mounting bracket using Lower Link Bushing Drift ST36070000. When tapping the drift with a hammer, be careful to hit the drift squarely.
16. Secure lower link to lower link bushing with lower link spindle and torque nut to 7.4 to 8.0 kg-m (54 to 58 ft-lb)

17. Install upper link spindle to upper link mounting bracket with used camber adjusting shims and bolts.

Torque bolt to 7.0 to 9.0 kg-m (51 to 65 ft-lb).

18. Install dust seal to the lower end of knuckle spindle support.
19. Coat grease on the thread of fulcrum pin and line up the notch of fulcrum pin with knuckle spindle support for inserting cotter pin. Fit fulcrum pin to spindle support with a soft hammer. Secure cotter pin and torque lock nut to 0.8 to 1.1 kg-m (5.8 to 8.0 ft-lb).
20. Coat grease to the thread portion of screw bushing inside liberally. Position knuckle spindle support at the center of lower link and secure screw bushings temporarily by hand. After ascertaining the dimensions become correct as shown in Figure FA-21, torque screw bushings to 20 to 30 kg-m (145 to 216 ft-lb).



FA240
Fig. FA-21 Installing screw bushing

21. Replace filler plug with grease nipple and pack grease until grease comes out from dust cover. Reinstall filler plug.
22. Upon installation, make sure that fulcrum pin operates smoothly with the following torque.

Operating torque:

Less than 0.5 kg-m (3.6 ft-lb)

23. Install upper link bushing to knuckle spindle support.
24. Install knuckle spindle support to upper link, insert fulcrum bolt, and torque nut to 3.9 to 5.3 kg-m (28 to 38 ft-lb).

FRONT AXLE AND FRONT SUSPENSION

Note: When installing fulcrum pin, insert it from rearward of vehicle.

25. Install tension rod, shock absorber, stabilizer, torsion bar spring, and knuckle arm, referring to the related paragraphs.

26. Install brake disc to knuckle spindle and torque securing bolt to 4.2 to 5.0 kg-m (30 to 36 ft-lb).

27. Install wheel and brake drum as an assembly and torque knuckle spindle nut to 8.0 to 9.0 kg-m (58 to 65 ft-lb).

Disassembly and assembly

Upper link

1. Detach upper link spindle from upper links and remove clamp, dust cover and dust seal. Secure upper link in a vise and loosen screw bushing.

Assemble link spindle in reverse sequence to disassembling, noting the following instructions.

2. Torque screw bushing on upper link to 35 to 55 kg-m (253 to 398 ft-lb). Install new dust seal and dust cover and secure them with clamp.

3. Coat grease to screw bushing inside and the thread portion of upper link spindle liberally. Screw front and rear links to upper link spindle in the same length so as to obtain the specified figures as shown in Figure FA-24.

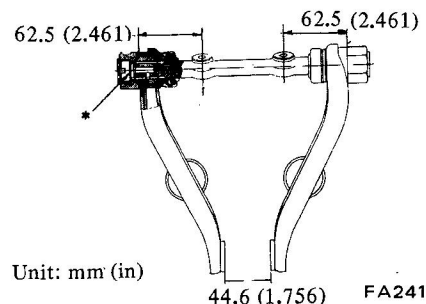


Fig. FA-22 Upper link and upper link spindle

4. Make sure to operate upper link spindle smoothly after installation.

5. Replace filler plug with grease nipple and pack grease until grease comes out from dust cover.

Reinstall filler plug.

Lower link

When installing torque arm on lower link, tighten it to the following specifications.

Serration boss:

1.8 to 2.6 kg-m
(13 to 19 ft-lb)

Arm head:

2.7 to 3.7 kg-m
(20 to 27 ft-lb)

Inspection

Upper link spindle, fulcrum pin and screw bushing

Apply screw bushing to upper link spindle or fulcrum pin and measure axial end play between them.

When the end play exceeds 0.35 mm (0.0138 in), replace upper link spindle or fulcrum pin together with screw bushings.

Check the screw of upper link spindle, fulcrum pin, and screw bushing and repair or replace if necessary.

Note: Discard dust cover and dust seal when disassembled.

ADJUSTMENT

Vehicle posture

Vehicle posture may be incorrect due to weakened spring or other defective condition. The following procedures are necessary when adjustment is required.

That is, the vehicle posture can be adjusted by obtaining only the specified "H" dimension, changing the length of anchor bolt.

1. Raise front of vehicle on stands.
2. Adjust "H" dimension with turning nut adjusting anchor bolt. "H" dimension changes approximately 3.5 mm (0.138 in) vertically when adjust nut is turned one complete turn.
3. To make the best vehicle posture, "H" dimension must be in the following range.

Model	H dimension mm (in)	
	Pick-up	Double Pick-up
Condition		
Vehicle empty no payload	78 to 82 (3.071 to 3.228)	63 to 68 (2.480 to 2.677)
Vehicle loaded	54.5 (2.146)	46 to 51 (1.811 to 2.008)

Notes:

a. Vehicle empty no payload consists of the following conditions:

- 1) Full tank of gasoline, radiator filled and engine oil level full
- 2) Spare tire, wheel, jack and jack handle in design position

b. Vehicle loaded consists of the following conditions:

For Pick-up model, 2-persons and 1,000 kg (2,205 lb) payload

For Double Pick-up model, 5-persons and 400 kg (882 lb) payload

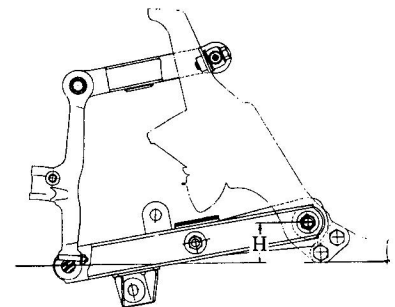


Fig. FA-23 Dimension for standard vehicle posture

FRONT AXLE AND FRONT SUSPENSION

Wheel alignment

Correct front wheel alignment attains proper vehicle handling characteristics and the least steering effort with a minimum amount of tire wear.

Before adjusting front wheel alignment, make sure to carry out a preliminary inspection of the front end parts for the following conditions:

1. Tire pressure and ballance
2. Wheel bearings and nuts
3. Steering gear play
4. Steering gear housing at frame
5. Steering linkage and connections
6. Shock absorber action

When using the equipment for front wheel alignment inspection, follow the instructions furnished with the equipment. Furthermore, the inspection should be made with the vehicle level and at curb weight.

Camber and caster

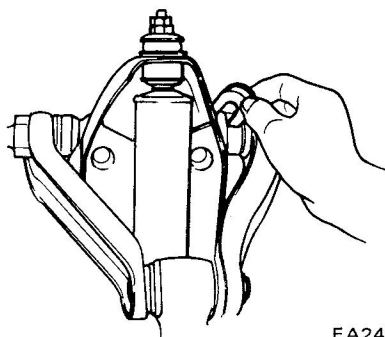
Measure camber and caster and adjsut them in accordance with the following procedures if necessary.

Both camber and caster are adjusted by increasing and decreasing thickness of adjust shim inserted between upper link spindle and upper link mounting bracket.

To adjust caster, made a difference between thickness of front and rear shims. By adding a shim 1 mm (0.0394 in) at front side, caster will be decreased by 33'. At the same time, camber will also be decreased by 6.5'.

To adjust camber, add or remove an equal amount of shims to front and rear sides. By adding a pack of shims 1 mm (0.0394 in) thick at both sides, camber will be decreased by 13'.

Shims are available in 1 mm (0.0394 in), 2 mm (0.0787 in) and 4 mm (0.1575 in) thickness.



FA243

Fig. FA-24 Adjusting camber and caster

Notes:

- a. Do not make difference between front and rear shims in thickness beyond 2 mm (0.0787 in) on a upper link spindle.
- b. Limit shim thickness for any one stack within 6 mm (0.236 in).
- c. Do not use shims for any one stack more the 2 sheets.

Toe-in

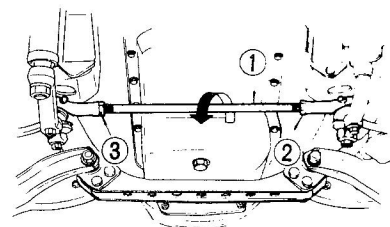
Measure toe-in and adjust if necessary. For adjustment, carry out the following procedures.

Turn steering wheel to straight ahead position with front wheels in the same position. Then, check steering gear straight ahead position.

Loosen lock nuts ② (left hand thread) and ③ (right hand thread) and turn cross rod ① to adjust toe-in. Turn cross rod to forward direction as shown by arrow, and toe-in is reduced.

When cross rod is turned to opposite side, toe-in is increased.

After correct toe-in is obtained, tighten lock nut to 8.0 to 10.0 kg-m (58 to 72 ft-lb).



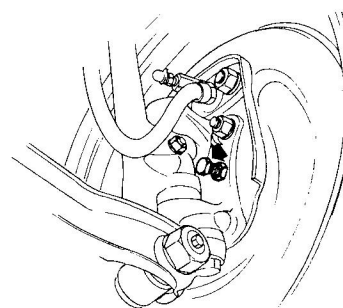
FA244

Fig. FA-25 Adjusting toe-in

Steering angle

Check steering angle and use the following procedures if necessary.

Loosen lock nut at stopper bolt and adjust steering angle with stopper bolt. After obtaining correct steering angle, secure lock nut firmly.



FA245

Fig. FA-26 Adjusting steering angle

		Pick-up	Double pick-up
Toe-in	mm (in)	1 to 5 (0.0394 to 0.1969)	2 to 3 (0.0787 to 0.1181)
Camber		1° 15' ±1°	1° 30' ±1°
Caster		1° 50' ±45'	1° 50' ±45'
Kingpin inclination		6° 15'	6°
Steering angle	Inner wheel	36° ±1°	←
	Outer wheel	31° ±1°	←

Unladen

FRONT AXLE AND FRONT SUSPENSION

SERVICE DATA AND SPECIFICATIONS

King pin

Clearance limit between the king pin and bushing	mm (in)	0.15 (0.0059)
Bushing inner diameter (when fitted)	mm (in)	20.010 to 20.035 (0.7878 to 0.7888)
Clearance between the knuckle spindle support and spindle	mm (in)	less than 0.1 (0.0039)

Wheel bearing

Tightening torque	kg-m (ft-lb)	3.0 to 3.5 (22 to 25)
Spindle nut returning angle		40 to 70°
Wheel bearing rotation starting torque		
When both bearing and seal are new	kg-cm (in-lb)	less than 15 (13.0)
When readjusted	kg-cm (in-lb)	less than 7 (6.1)
At the hub bolt		
When both bearing and seal are new	kg (lb)	less than 2.1 (4.6)
When readjusted	kg (lb)	less than 1.0 (2.2)

Suspension link

Upper link sliding resistance	kg-m (ft-lb)	less than 0.5 (3.6)
Lower link sliding resistance	kg-m (ft-lb)	less than 0.5 (3.6)

Tightening torque

	kg-m (ft-lb)
Brake hose connecting nut	1.9 to 2.5 (14 to 18)
Wheel bearing lock nut	3.0 to 3.5 (22 to 25)
Brake disc fixing bolt	4.2 to 5.0 (30 to 36)
Knuckle arm fixing bolt	10.3 to 12.1 (75 to 88)
King pin lock bolt	2.1 to 2.5 (15.2 to 18.1)
Torque arm	
Arm end	2.7 to 3.7 (20 to 27)
Serration boss	1.8 to 2.6 (13 to 19)
Lower link spindle nut	7.4 to 8.0 (54 to 58)
Upper link screw bushing	35 to 55 (253 to 398)
Upper link spindle bolt fixing to bracket	7 to 9 (51 to 65)
Cotter pin lock nut	0.8 to 1.1 (5.8 to 8.0)
Lower link screw bushing	20 to 30 (145 to 217)
Fulcrum bolt	3.9 to 5.3 (28 to 38)
Tension rod	
Lock nut	1.6 to 2.2 (12 to 16)
Bracket bolt	1.6 to 2.2 (12 to 16)
Shock absorber	
Lock nut of the upper end	1.6 to 2.2 (12 to 16)
Lower end	3.1 to 4.1 (22 to 30)
Stabilizer	
Bracket bolt	1.6 to 2.2 (12 to 16)
Lock nut of the anchor bolt	3.1 to 4.1 (22 to 30)
Bumper rubber bolt	0.8 to 1.1 (5.8 to 8.0)

FRONT AXLE AND FRONT SUSPENSION

TROUBLE DIAGNOSES AND CORRECTIONS

Condition	Probable cause	Corrective action
Vibration, shock and shimmying of steering wheel.	<p>Vibration: Too much backlash of steering gear, wear of each part of linkage and vibration of front wheels are, in many cases, transmitted to the steering wheel. This is very much noticeable when travelling over bad roads and at higher speeds.</p> <p>Shock: When the front wheels are travelling over bumpy roads, the play of the steering linkage is transmitted to the steering wheel. This is especially noticeable when travelling rough road.</p> <p>Shimmy: Abnormal vibrations of the front suspension group and the whole steering linkage, which occur when a specific speed is attained.</p> <p>Improper air pressure of tire.</p> <p>Unbalance and deformation of roadwheel.</p> <p>Unevenly worn tire or insufficient tightening.</p> <p>Improperly adjusted or worn front wheel bearing.</p> <p>Faulty wheel alignment.</p> <p>Worn or loose suspension link screw bushing.</p> <p>Damaged idler arm.</p> <p>Insufficiently tightened steering gear housing.</p> <p>Worn steering linkage.</p> <p>Improper steering gear adjustment (insufficient backlash).</p> <p>Defective shock absorber or loose installation.</p> <p>Unbalanced vehicle posture.</p>	<p>Adjust.</p> <p>Correct the unbalance or replace.</p> <p>Replace or tighten.</p> <p>Adjust or replace.</p> <p>Adjust.</p> <p>Replace.</p> <p>Replace.</p> <p>Tighten.</p> <p>Replace ball joint.</p> <p>Adjust.</p> <p>Replace or tighten.</p> <p>Adjust.</p>
Vehicle pulls to right or left.	<p>When driving with hands off the steering wheel on a flat road, the vehicle gently swerves to right or left.</p> <p>Note: A defective rear suspension may also be the cause of this trouble and, therefore, see also the chapter dealing with the rear suspension.</p> <p>Improper air-pressure of tire or insufficient tightening of wheel nuts.</p> <p>Difference in height of right and left tire treads.</p> <p>Incorrect adjustment or abrasion of front wheel bearing.</p> <p>Weakened front torsion spring or deviation from standard specification.</p> <p>Improper wheel alignment.</p> <p>Worn or loose suspension link screw bushing.</p>	<p>Adjust or tighten.</p> <p>Replace tires.</p> <p>Adjust or replace.</p> <p>Replace.</p> <p>Readjust.</p> <p>Replace.</p>

FRONT AXLE AND FRONT SUSPENSION

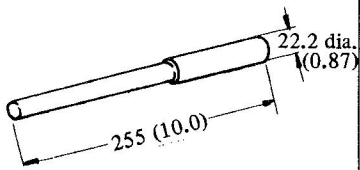
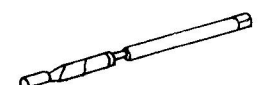
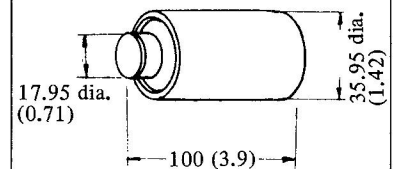
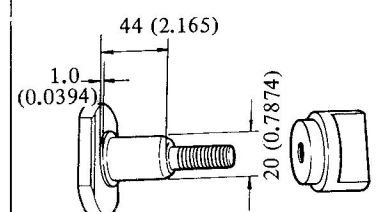
Condition	Probable cause	Corrective action
Vehicle pulles to right or left.	Deformed of steering linkage and suspension link. Unbalanced vehicle level.	Replace. Correct the unbalance.
Instability of vehicle.	Improper air pressure of tire. Worn or loose suspension link screw bushing. Incorrect wheel alignment. Worn or deformed steering linkage and suspension link. Incorrect adjustment of steering gear. Deformed unbalanced wheel.	Adjust. Replace. Adjust. Replace. Adjust. Correct or replace.
Stiff steering wheel	Check and correct in the following manner. Jack up front wheels, detach the steering gear and operate the steering wheel, and: a) If it is light, check steering linkage, and suspension groups. b) If it is heavy, check steering gear and steering column groups. Improper air pressure of tire. Insufficient lubricants or mixing impurities in steering linkage or excessively worn steering linkage. Insufficient lubricant in gear box or contaminated lubricant. Unsmooth king pin, damaged part, or insufficient lubrication. Worn or incorrectly adjusted wheel bearing. Worn damaged steering gear and bearing. Incorrectly adjusted steering gear. Deformed steering linkage. Incorrect wheel alignment. Interference of steering column with turn signal switch.	Adjust. Replenish grease or replace the part. Add or replace gear oil. Replace. Replace or adjust. Replace. Adjust. Replace. Adjust. Adjust.
Excessive steering wheel play.	Incorrectly adjusted steering gear. Worn steering linkage idler arm. Improperly fitted of gear box. Incorrectly adjusted wheel bearing. Worn or loose suspension link screw bushing.	Adjust. Replace. Retighten. Adjust. Replace.
Noise.	Improper air pressure of tire. Insufficient lubricating oil and grease for suspension link screw bushing and steering linkage, or their breakage.	Adjust. Replenish lubricating oil and grease, or replace.

FRONT AXLE AND FRONT SUSPENSION

Condition	Probable cause	Corrective action
Noise.	Loose steering gear bolts, linkage and suspension groups. Defective shock absorber. Defective wheel bearing. Worn steering linkage and steering gear. Worn of loose suspension link screw bushing.	Retighten. Replace. Replace. Replace. Replace.
Grating tire noise.	Improper air pressure of tire. Incorrect wheel alignment. Deformed knuckle spindle and suspension linkage. Rough driving.	Adjust. Adjust. Replace. Avoid rough driving.
Jumping of disc wheel.	Improper air pressure of tire. Unbalanced wheels. Defective shock absorber. Defective tire. Deformed wheel rim.	Adjust. Adjust. Replace. Replace. Replace.
Excessively or partially worn tire.	Improper air pressure of tire. Incorrect wheel alignment. Defective wheel bearing. Incorrect brake adjustment. Improper tire shifting (rotation). Rough and improper driving manner.	Adjust. Adjust. Replace. Adjust. Adjust. Drive more gently.

FRONT AXLE AND FRONT SUSPENSION

SPECIAL SERVICE TOOL

No.	Tool number & tool name	Description Unit: mm (in)	For use on	Reference page or figure No.
1.	ST35380000 King pin bush drift	 SE234	620 521	Page FA-4
2.	HT56802000 King pin bush reamer	 SE235	620 521	Page FA-5
3.	ST36070000 Lower link bush drift	 SE236	620 521	Page FA-10 Fig. FA-20
4.	ST35390000 Grease seal drift	 SE237	620	Page FA-5 Fig. FA-9